

Claim Amendments

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

Claims 1 and 2. (Canceled)

Claim 3. (Previously Presented) A polyurethane (A) prepared from reactants consisting essentially of:

- a) at least one (cyclo)aliphatic organic diisocyanate or polyisocyanate,
- b) at least one compound comprising at least one isocyanate-reactive group and at least one free radically polymerizable unsaturated group and/or cationically polymerizable group,
- c) at least one compound comprising at least one isocyanate-reactive group and at least one capped amino group and having a molecular weight below 1000 g/mol,
- d) optionally, at least one compound comprising at least one isocyanate-reactive group and at least one actively dispersing group, and
- f) optionally, compounds other than a) to d) comprising at least one isocyanate-reactive group.

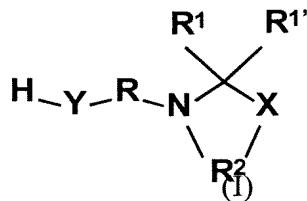
Claim 4. (Currently Amended) The polyurethane (A) according to claim 4 19, wherein component c) has a molecular weight below 750 g/mol.

Claim 5. (Currently Amended) The polyurethane according to claim 4 19, comprising per 100 g of compound at least 0.01 mol of unsaturated free radically or cationically

polymerizable groups and/or at least 0.01 mol of capped amino groups.

Claim 6. (Currently Amended) The polyurethane according to claim + 19, wherein the amino group of said at least one capped amino group is selected from the group consisting of open-chain aminals, cyclic aminals, ketimines, aldimines, N,O-acetals, N,O-ketals, carboxamides, sulfonamides, and amidines.

Claim 7. (Currently Amended) The polyurethane according to claim + 19, wherein component c) has the formula (I)



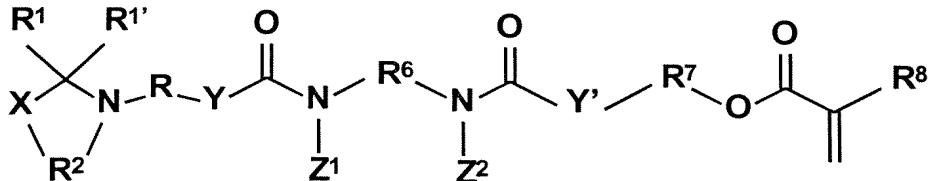
where

R and R² independently are each a divalent organic aliphatic, cycloaliphatic or aromatic radical comprising 2 to 20 carbon atoms which is unsubstituted or substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles;

R¹ and R^{1'} independently are each hydrogen, C₁–C₁₈ alkyl, C₂–C₁₈ alkyl which is uninterrupted or interrupted by one or more oxygen and/or sulfur atoms and/or by one or more substituted or unsubstituted imino groups, or is C₆–C₁₂ aryl, C₅–C₁₂ cycloalkyl or a five- or six-membered heterocycle containing oxygen, nitrogen and/or sulfur atoms, and each of said radicals optionally being substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles;

X is oxygen (-O-), unsubstituted or monosubstituted nitrogen (-N(R⁴)-) or >N-NR⁴R⁵;
Y is oxygen (-O-), unsubstituted nitrogen (-N(H)-) or sulfur (-S-); and
R⁴ and R⁵ independently are each hydrogen or C₁-C₄ alkyl.

Claim 8. (Currently Amended) The polyurethane according to claim 4 19, comprising at least one of the following compounds of formula (II)



wherein

R and R² independently are each a divalent organic aliphatic, cycloaliphatic or aromatic radical containing 2 to 20 carbon atoms and unsubstituted or substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles;

R¹ and R^{1'} independently are each hydrogen, C₁-C₁₈-alkyl, C₂-C₁₈-alkyl which is uninterrupted or interrupted by one or more oxygen and/or sulfur atoms and/or by one or more substituted or unsubstituted imino groups, or are each C₆-C₁₂-aryl, C₅-C₁₂-cycloalkyl or a five- or six-membered heterocycle containing oxygen, nitrogen and/or sulfur atoms, and each of said radicals optionally being substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles;

X is oxygen (-O-), unsubstituted or monosubstituted nitrogen (-N(R⁴)-) or >N-NR⁴R⁵;

Y is oxygen (-O-), unsubstituted nitrogen (-N(H)-) or sulfur;

Y' is the same as or different from Y;

R⁶ and R⁷ each independently are a divalent organic aliphatic, cycloaliphatic or aromatic radical containing 2 to 20 carbon atoms and unsubstituted or substituted by functional groups, aryl, alkyl, aryloxy, alkyloxy, halogen, heteroatoms and/or heterocycles; R⁸ is hydrogen, methyl, ethyl or hydroxymethyl, and Z¹ and Z² are identical or different and independently of one another are hydrogen or -(CO)-NH-R⁶-NCO.

Claim 9. (Currently Amended) A polyurethane dispersion, comprising:

(A) a polyurethane according to claim 4 19 and comprising component d),

(C) optionally, one or more photochemically and/or thermally activatable initiators,

and

(D) optionally, further coatings additives.

Claim 10. (Previously Presented) A coating composition, comprising:

said polyurethane dispersion according to claim 9, and

(C) optionally, one or more photochemically and/or thermally

activatable initiators, and

(D) optionally, further coatings additives.

Claim 11. (Currently Amended) A method of coating a substrate, which comprises:

radiation curing a substrate coated with said polyurethane as claimed in claim 4 19, and

heating the applied polyurethane at a temperatures up to 160° C.

Claim 12. (Previously Presented) The method according to claim 11, wherein said temperature ranges from 60 to 160° C.

Claim 13. (Previously Presented) The method according to claim 11, wherein the radiation curing is conducted under inert gas.

Claim 14. (Currently Amended) A radiation-curable coating composition comprising said polyurethane according to claim + 19.

Claim 15. (Currently Amended) A method for coating wood, metal or plastic, said method, comprising:

coating said wood, metal or plastic with said polyurethane according to claim + 19.

Claim 16. (Currently Amended) An automotive paint or automotive topcoat material comprising said polyurethane as claimed in claim + 19.

Claim 17. (Currently Amended) A coating composition, comprising:

said polyurethane (A) according to claim + 19 and

(C) optionally, one or more photochemically and/or thermally activatable initiators, and

(D) optionally, further, additives.

Claim 18. (Previously Presented) A method for coating wood, metal or plastic, said method, comprising:

coating said wood, metal or plastic with said polyurethane dispersion according to

claim 9.

Claim 19. (New) A polyurethane (A) prepared from reactants consisting essentially of:

- a) at least one organic diisocyanate or polyisocyanate,
- b) at least one compound comprising at least one isocyanate-reactive group and at least one free radically polymerizable unsaturated group and/or cationically polymerizable group,

- c) at least one compound comprising at least one isocyanate-reactive group and at least one capped amino group and having a molecular weight below 1000 g/mol,
- d) optionally, at least one compound comprising at least one isocyanate-reactive group and at least one actively dispersing group,
- e) optionally, at least one diol compound which is a hydrocarbon diol having from 2 to 20 carbon atoms, and
- f) optionally, compounds other than a) to d) comprising at least one isocyanate-reactive group, the allophanate fraction being 5 to 65 mol % based on the lowest molecular weight allophanate molecule.

Claim 20. (New) A polyurethane (A) prepared from reactants consisting essentially of:

- a) at least one organic diisocyanate or polyisocyanate,
- b) at least one compound comprising at least one isocyanate-reactive group and at least one free radically polymerizable unsaturated group and/or cationically polymerizable group,

- c) at least one compound comprising at least one isocyanate-reactive group and at least one capped amino group and having a molecular weight below 1000 g/mol,
- d) 1-30 mol % of at least one compound comprising at least one isocyanate-reactive group and at least one actively dispersing group,
- e) optionally, at least one compound comprising at least two isocyanate-reactive groups which is a hydrocarbon diol having from 2 to 20 carbon atoms, and
- f) optionally, compounds other than a) to d) comprising at least one isocyanate-reactive group.

Claim 21. (New) The polyurethane according to claim 19, wherein component (e) is a diol selected from the group consisting of ethylene glycol, 1,2-propanediol, 1,3-propanediol, 1,1-dimethylethane-1,2-diol, 1,6-hexanediol, 1,10-decanediol, bis-(4-hydroxycyclohexane)isopropylidene, tetramethylcyclobutanediol, 1,2-, 1,3- or 1,4-cyclohexanediol, cyclooctanediol, norbornanediol, pinanediol, decalindiol, diethylene glycol, triethylene glycol, dipropylene glycol, tripropylene glycol, neopentyl glycol, pentaerythritol, 1,2- and 1,4-butanediol, 1,5-pantanediol, 2-methyl-1,5-pantanediol, 2-ethyl-1,4-butanediol, 1,2-, 1,3- and 1,4-dimethylolcyclohexane, glycerol, trimethylolethane, trimethylolpropane, trimethylolbutane, dipentaerythritol, ditrimethylolpropane, erythritol, sorbitol, 2-aminoethanol, 3-amino-1-propanol, 1-amino-2-propanol or 2-(2-aminoethoxy)ethanol, bisphenol A and butanetriol.

Claim 22. (New) The polyurethane according to claim 20, wherein component (e) is a diol selected from the group consisting of ethylene glycol, 1,2-propanediol, 1,3-propanediol, 1,1-dimethylethane-1,2-diol, 1,6-hexanediol, 1,10-decanediol, bis-(4-hydroxycyclohexane)isopropylidene, tetramethylcyclobutanediol, 1,2-, 1,3- or 1,4-

Appln. No. 10/526,017
Reply to the Office Action of July 18, 2007

cyclohexanediol, cyclooctanediol, norbornanediol, pinanediol, decalindiol, diethylene glycol, triethylene glycol, dipropylene glycol, tripropylene glycol, neopentyl glycol, pentaerythritol, 1,2- and 1,4-butanediol, 1,5-pantanediol, 2-methyl-1,5-pantanediol, 2-ethyl-1,4-butanediol, 1,2-, 1,3- and 1,4-dimethylolcyclohexane, glycerol, trimethylolethane, trimethylolpropane, trimethylolbutane, dipentaerythritol, ditrimethylolpropane, erythritol, sorbitol, 2-aminoethanol, 3-amino-1-propanol, 1-amino-2-propanol or 2-(2-aminoethoxy)ethanol, bisphenol A and butanetriol.